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Mitsubishi Electric Guide to the Non-Domestic Renewable Heat Incentive

Information Guide 70

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Mitsubishi Electric Guide to the Non-Domestic Renewable Heat Incentive

This is an independent guide produced by Mitsubishi Electric to enhance the knowledge of its customers and provide a view of the key issues facing our industry today.

This guide accompanies a series of seminars, all of which are CPD certified.

Contents

Background and essentials

The non-domestic Renewable Heat Incentive is a financial support mechanism for renewable heat targeted predominantly at the commercial and industrial sectors.

Launched in November 2011, it provides payments to industry, businesses and public sector organisations that generate on-site and use renewable energy to heat their buildings. Owners of eligible installations that meet the criteria for the scheme receive quarterly payments (based on heat energy generated by the system) for 20 years.

According to recent Ofgem figures, there have been 19,301 non-domestic installations accredited since the beginning of the scheme with a total capacity of 4,523MW. They have been utilised across all sectors, from farms to construction firms, manufacturers, retailers, holiday parks and hotels.

The Renewable Heat Incentive (RHI) was described at its launch by the Government as the world's first long-term financial support programme for renewable heat.

Essentially, the RHI scheme offers a subsidy for each kWh (kilowatt hour) of eligible renewable heat generated from accredited installations and also by registered producers of biomethane. The objective of the RHI is to significantly increase the proportion of the UK's heat that is generated from renewable sources, driving change in a heating sector that is currently dominated by fossil fuel technologies such as oil and gas.

The non-domestic RHI aims to encourage the uptake of renewable heat technologies by compensating for barriers to their adoption, including the current higher capital costs and in some cases higher operational expenditure for these technologies compared to those using traditional fossil fuels.

The heat generated must be used for space, water or process heating to be eligible for RHI support and participants in the scheme will be required to meet a number of ongoing obligations, including maintaining equipment, providing information to Ofgem (which administers the scheme) and allowing installations to be inspected.

The non-domestic scheme covers several types of heating including:

- **Biomass - small, medium and large**
- **Heat pumps including air-to-water (ATW) and ground-to-water (GTW)**
- **Geothermal**
- **Solar thermal collectors** (at capacities of less than 200kWth)
- **Biomethane injection and biogas combustion**

Focus on heating

Introducing the scheme in 2011, the then Minister of State for Energy and Climate Change Greg Barker, said:

> "Taking action now to switch from fossil fuels to cleaner and more sustainable green sources of heat will reduce the impact that our heat requirements have on the environment and help ensure the UK has an energy supply that is safe, secure and reliable. It is for this reason that we are introducing the Renewable Heat Incentive making renewable heat not just an environmentally sound decision, but also a financially attractive one. This support can help drive take-up of renewables now, stimulate the renewables industry, encourage further innovation and ultimately, bring down the cost of renewable heating."

And almost a decade later, government is continuing its focus on decarbonising heating the UK. The national goal of net zero carbon by 2050 has heating high on the agenda, and the RHI continues to support the shift away from fossil-fuel powered heating systems. While electricity generation in the UK has shifted steadily towards low carbon sources, heating still relies on fossil fuels. And heating uses the largest proportion of energy in buildings in the UK. According to the government, the UK uses more energy for heating than for transport or even the generation of electricity. Almost half of the final energy consumed in the UK is in the form of heat and its generation is reckoned to account for 47% of UK CO_2 emissions.

By increasing heat generation from renewable energy sources rather than fossil fuels, the RHI is designed to help meet European legislation asking for 12% of heat to be generated by renewables, whilst helping the UK cut greenhouse gas emissions so that it can meet targets for reducing the effects of climate change. To play its part in the global effort to combat climate change, buildings in the UK will need to be virtually zero carbon by 2050. Like its counterpart, the domestic RHI scheme, the non-domestic scheme is designed to contribute to a reduction in carbon emissions to help achieve this.

Criteria for eligibility and registration

The definition of a non-domestic property eligible for the RHI is that it must not be a single dwelling. Examples of eligible properties include commercial offices, schools or community/district heating schemes. These types of building will attract the non-domestic RHI tariff whether the heating load is 5kW or 1MW.

Only installations of 45kWth or less must be installed by a company registered on the Microgeneration Certification Scheme (MCS) and with equipment also registered on the MCS. The MCS is an industry-led, internationally recognised quality assurance scheme supported by the Department of Energy & Climate Change (DECC).

MCS certifies microgeneration technologies used to produce electricity and heat from renewable sources. It also certifies installation companies to ensure the microgeneration products have been installed and commissioned to the highest standard

RHI payments are only made to the 'owner' of the installation used or intended to be used for the renewable generation of heat or a producer of biomethane, in accordance with the legislation underpinning the scheme.

The owner of an installation is the person with exclusive rights and liabilities in respect of that installation. The owner will therefore usually be the person who purchased and paid for the installation of the equipment.

To be eligible for the non-domestic RHI scheme:

- **If the installed capacity is 45kW or less then installers must have MCS certification**
- **Equipment must be new at the time of purchase**
- **The installation must have planning permission or an environmental permit (depending on technology) if necessary**
- **The system must be metered using the correct type of meters which are located correctly. The meters must be maintained and recalibrated at least every ten years, or according to manufacturer recommendations**
- **Equipment must use liquid or steam to deliver the heat (no direct air heating)**
- **Equipment must be used to heat a space or water, or for carrying out a process where the heat is used within a building. It can also be used outside for commercial cleaning or drying**
- **Equipment cannot be used to heat a single home (though a combination of homes sharing a heating installation might be eligible - e.g. community heating for a block of flats)**
- **Any public grants received for the installation must be declared and repaid, or it must be shown that they will be repaid by deduction to incentive payments in certain circumstances.**

There are also eligibility requirements for particular technologies that must be met. For example, air to water heat pumps must not be designed to provide cooling; or be designed to use heat expelled from a building (for installations less than or equal to 45kWth).

Full details can be downloaded at:
https://www.ofgem.gov.uk/system/files/docs/2019/01/guidance_volume_1_oct_2018.pdf

Criteria for eligibility and registration

Applications for RHI funding for non-domestic schemes are made through the Ofgem website. Ofgem emphasises that high-quality applications are very important for a speedy decision.

There are five steps to take:

- Gather appropriate documentation: technical specifications; photographs of meters and plant; schematics; planning consents; invoices
- Create an account on the RHI Register - You need to be the authorised signatory for your organisation, which means you are the owner or authorised representative of your organisation
- Complete the application form
- Upload evidence – Ofgem will review the application and evidence and may request further information
- Verify identity and bank details

Biomethane producers are treated differently from other participants in the RHI. This is because the Government has decided that the regulations and standards currently in place for biomethane injection are sufficient to ensure that the RHI requirements are met, so no further RHI-specific accreditation standards are necessary. As a result the Regulations describe the process for biomethane producers as ‘registration’ rather than ‘accreditation’.

Once accredited, equipment owners must send a report to Ofgem every year to confirm that they are still eligible. They will need to confirm the installation company details and show evidence of the date of installation and the installation serial number.

Each application will be different, but evidence could include:

- Commissioning certificate or commissioning report for the installation
- Schematic diagram of the installation
- Photo of meter(s), electrical and/or heat, clearly showing the serial number and MID/Class 2 markings
- Letter of authorisation that confirms the organisation's Authorised Signatory for its RHI account. Evidence of non-single domestic status such as multiple council tax bills or a business rates bill
- Independent report on Metering Arrangements if the installation has a capacity of 1MW or above, or is classed as "multiple" for RHI metering purposes
- Evidence of Coefficient of Performance CoP and seasonal CoP. This is required for heat pumps
- Photo of the nameplate of the installation clearly showing the capacity and serial number

It is important to note that Ofgem's own website highlights of having the correct information to hand when making an application, particularly technical data. When delays to applications happen, it is largely because the correct information has not been supplied.

How payments work for the non-domestic RHI

Financial support from the non-domestic RHI will be paid at a set rate per unit of renewable heat generated. Payments will be made quarterly for twenty years. Tariffs are set for each type of RHI-eligible technology, and the Government expects to update these tariffs on a regular basis.

They will be kept in line with the Retail Prices Index (RPI) and will also be linked to uptake levels for each eligible technology. The aim is to ensure that the RHI scheme stays within its budget, so tariffs could be altered to account for particularly high uptake that exceeds the Government's predictions. This process of tariff smoothing is known as 'degression'.

The basic tariff levels are based on the technology used, and when it was accredited. The amount of payment received also depends on the Eligible Heat Output (EHO). The tariff levels for the different technology have been calculated to support the RHI technologies and encourage a move away from non-sustainable methods of heating buildings.

The EHO figure will be calculated by Ofgem, which will use data, supplied by owners, hence the importance of correct metering (outlined below). The table shows tariffs available for installations for Quarter 3 2020/2021 and are in pence per kWhth. Where shown, the different tiers of tariff refer to amounts paid for the first 15% of heat energy generated (tier 1), followed by a slightly lower payment for all further heat output (tier 2).

Applications submitted	Biomass boilers accredited after September 2017	Air source heat pumps accredited after April 2016	*Large water/ground source heat pumps accredited after October 2020	**Small water/ground source heat pumps accredited after April 2016	Solar thermal accredited after April 2016
Tier 1	3.15	2.79	5.58	9.68	11.2
Tier 2	2.21	NA	1.66	2.89	NA

* Large water/gshps are 100kWth or above; ** small water/gshps are less than 100kWth

The tariffs are updated regularly, so it is important to ensure you are aware of tariff changes at all times when considering an installation. Please see the link in our References section to find the latest figures.

Obligations to stay compliant

In order to remain compliant with the RHI scheme's rules and to continue receiving payments, owners of the equipment must ensure that they adhere to Ofgem's 'ongoing obligations'.

These are:

- Submit meter readings regularly to receive RHI payments. Installations of under 1MWth require quarterly readings; those with greater capacity must submit monthly readings
- Those with biomass installations need to keep a careful record of fuel use
- Maintain and service the equipment and retain evidence of this
- Inform Ofgem of any changes to the installation and sign an annual declaration

RHI technologies and techniques

The RHI has been set up to encourage take-up of a range of technologies so that users and specifiers can use the most appropriate technology for their site. There are particular rules for certain heating types under the RHI so these should always be carefully examined when making a choice of technologies, as eligibility will depend on strict adherence to the appropriate requirements.

For example, air-to-water (ATW) heat pumps were added to the list of eligible technologies in December 2013. Installations from that date will be able to claim the new tariff from spring 2014. The tariffs on these technologies are paid on the total energy delivered, rather than the renewable energy delivered.

But there is now a requirement for air-to-water (ATW) and ground-to-water (GTW) heat pumps to achieve a minimum seasonal efficiency of Seasonal Performance Factor (SPF) of 2.5.

The intended calculation methodology for seasonal performance for heating will be BS EN 14825:2018 (air conditioners, liquid chilling packages and heat pumps with electrically driven compressors, for space heating and cooling. Testing and rating at part load conditions and calculation of seasonal performance).

Evidence will be required during the application process to show compliance to this standard. Heat pumps used to generate hot water will be measured against BS EN 16147 (Heat pumps with electrically driven compressors. Testing and requirements for marking of domestic hot water units).

The new policy intention is for all ATW installations to be heating-only, in order to ensure they are used and applied to buildings that would have otherwise used a fossil fuel boiler. However, reversible (cooling-capable) GTW systems will be allowed under the scheme.

Heat put into the ground from solar, waste heat from cooling or waste heat from an industrial process will also be permissible. Under these circumstances a heat meter will be required on the ground loop as well as the heating circuit. This will be used to measure the proportion of heat from the ground versus the proportion of heat delivered. Where this ratio drops below 3/5th of heat from the ground, the system will not be classed as renewable and therefore would not continue to receive the incentive.

The importance of metering

The Non-domestic RHI Regulations specifies the types of heat meter that must be used for an installation to be eligible. These meters comply with the Measuring Instruments Directive (MID) 2004/22/EC. All heat meters used for RHI purposes must include a flow sensor (or meter) and a matched pair of temperature sensors to measure the difference between the input and output of the system.

There must also be a calculator or digital integrator. In some cases this will take the form of the building energy management system (BEMS). This is used to calculate the heat energy being transferred.

Consideration needs to be given to positioning meters, as each technology has different metering requirements. Ofgem will offer advice in this area during the design stage. For example, electrical consumption meters will also need to be installed on all heat pumps. This is to enable accurate feedback on each unit's performance and seasonal efficiency. It will not affect payments, but the information gathered is intended to be used for future policy developments. However, where heat pump systems are not meeting an SPF of 2.5, Ofgem will notify users and recommend changes to the system.

It is clear therefore that using properly accredited equipment and knowledgeable installers is going to be an important part of ensuring that a project can receive RHI payments and continue to do so for the long-term.

RHI technologies and techniques

Looking to the future

Government had planned to close the Non-domestic RHI scheme to new projects on March 31st 2021. However, as part of the government's COVID-19 response, application deadlines were extended to March 2022 for 'eligible projects'.

This means that affected projects can submit an 'extension application'. It is important to note that the extension applies 'for those projects that had invested resource into project development prior to' 17th August 2020. Full details on that extension can be found at:
https://assets.publishing.service.gov.uk/government/uploads /system /uploads/attachment_data/file /933108/changes-to-rhi-support-covid19-response-further-govt-response.pdf

Eventually, government will replace the RHI and is already consulting on a new Low Carbon Heat Support Scheme. Proposals include a Clean Heat Grant for heat pumps, which could offer financial support through an up-front capital grant (rather than payments over time).

In December 2020, government introduced its Ten Point Plan for a Green Industrial Revolution. This sets out further policies to take the UK to its goal of net zero carbon by 2050. There can be no doubt that decarbonised heating will play a significant role in achieving that objective, and adopting these low-carbon technologies today will result in heating systems that are truly future-proofed.

Useful sources of information

Ofgem:
ofgem.gov.uk Email: rhi.enquiry@ofgem.gov.uk Telephone: 0845 200 2122

For the latest updates and information on the RHI:
ofgem.gov.uk/publications-and-updates/non-domestic-rhi-main-guidance

For the latest Non-Domestic RHI tariffs see:
ofgem.gov.uk/publications-and-updates/non-domestic-rhi-tariff-table

Future support for low carbon heat - Information on the government consultation on future schemes and grants for heating:
https://www.gov.uk/government/consultations/future-support-for-low-carbon-heat

The Ecodan Selection Tool supplied by Mitsubishi Electric already has a RHI calculator built in for non-domestic installations and can be used to help with estimating RHI amounts and cost savings. Further updates to this tool will be made to include different markets and building types. Please refer to the following website:
ecodanselectiontool.mitsubishielectric.co.uk

For additional information on renewable heat pumps and case studies of product in situ, please also refer to the Mitsubishi Electric website: **les.mitsubishielectric.co.uk**

To receive a CPD seminar on ‘Non-Domestic Renewable Heat Incentive’, you can call your Mitsubishi Electric Regional Sales Office to arrange an in-house presentation of this information.

If you would like to receive invitations to future CPD events, please email **livingenvironmentalsystems@meuk.mee.com**

Further information

Regional Sales Offices, please call one of the numbers below:

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Tel: 01454 202050

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Tel: 01924 241120

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Tel: 01506 444960

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Tel: 0161 866 6060

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Tel: 01737 387170

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Note: The fuse rating is for guidance only. Please refer to the relevant databook for detailed specification. It is the responsibility of a qualified electrician/electrical engineer to select the correct cable size and fuse rating based on current regulation and site specific conditions. Mitsubishi Electric’s air conditioning equipment and heat pump systems contain a fluorinated greenhouse gas, R410A (GWP:2088), R32 (GWP:675), R407C (GWP:1774), R134a (GWP:1430), R513A (GWP:631), R454B (GWP:466), R1234ze (GWP:7) or R1234yf (GWP:4). *These GWP values are based on Regulation (EU) No 517/2014 from IPCC 4th edition. In case of Regulation (EU) No.626/2011 from IPCC 3rd edition, these are as follows. R410A (GWP:1975), R32 (GWP:550), R407C (GWP:1650) or R134a (GWP:1300).

Effective as of January 2021

Green Gateway greengateway.mitsubishielectric.co.uk